



JOHN DEERE



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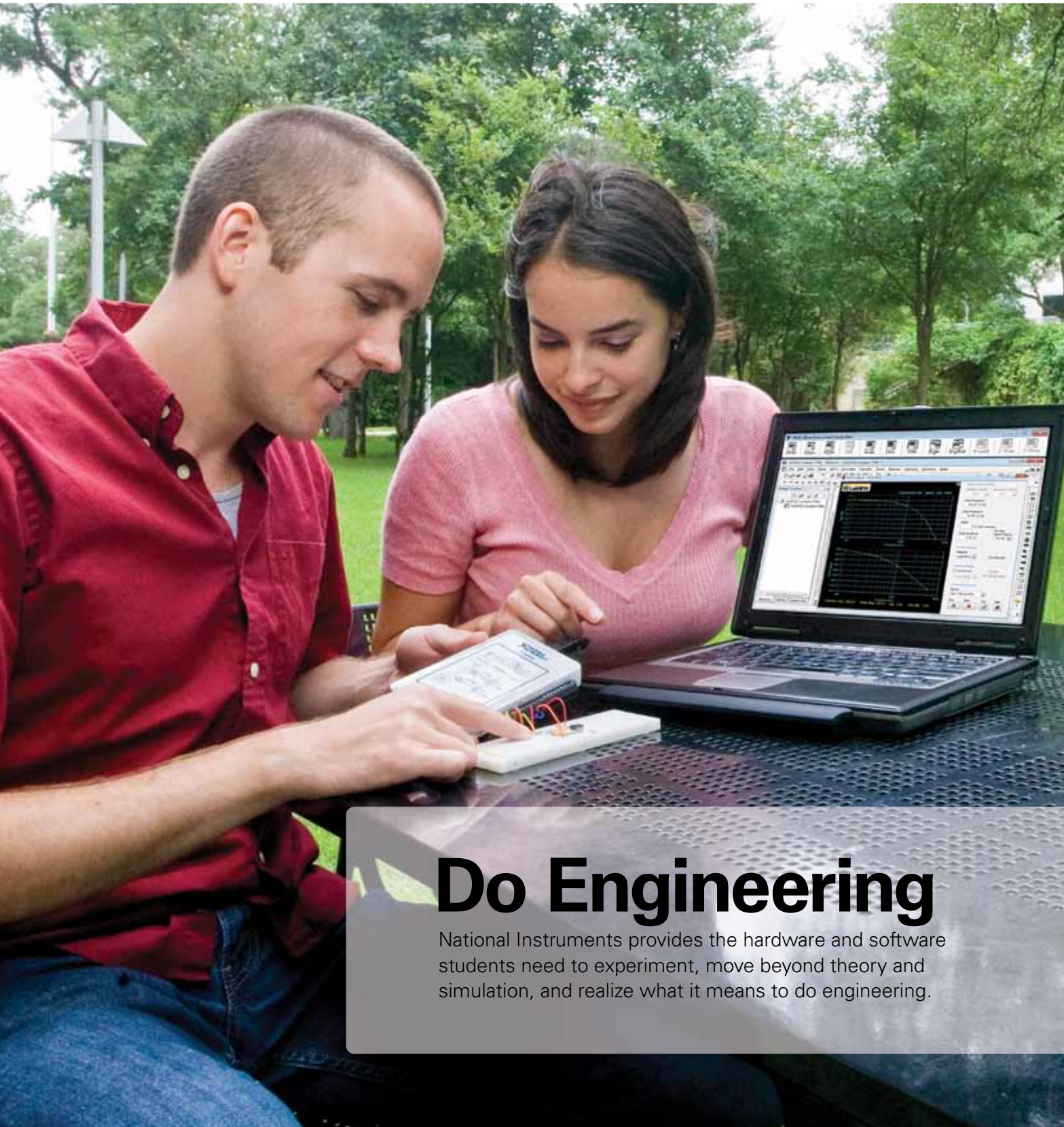
MAY 30 - JUNE 1, 2012 ▶ CHAMPAIGN-URBANA, IL

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CONFERENCE PROGRAM



www.capstoneconf.org



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Wednesday, May 30, 2012

- 8:00 - 9:00 a.m.....Registration Check-in/ Continental Breakfast
- 9:00 - 10:30 a.m.....Opening Session
- 10:30 - 11:00 a.m.....Break
- 11:00 - 12:30 p.m.....Panel Session 1
- 12:30 - 2:00 p.m.....Keynote Lunch
- 2:00 - 3:30 p.m.....Panel Session 2
- 3:30 - 4:00 p.m.....Break
- 4:00 - 5:30 p.m.....Poster Session 1
- 5:30 - 6:00 p.m.....Break
- 6:00 - 7:30 p.m.....Workshop Session 1 (with box dinner)
- 7:30 - 8:00 p.m.....Dessert Break
- 8:00 - 9:30 p.m.....Workshop Session 2

Thursday, May 31, 2012

- 6:30 - 7:30 a.m.....Run/Walk
- 8:00 - 9:00 a.m.....Registration Check-in/ Continental Breakfast
- 9:00 - 12:30 p.m.....Local Tours and Activities
- 12:30 - 2:00 p.m.....Birds of a Feather Lunch
- 2:00 - 3:30 p.m.....Panel Session 3
- 3:30 - 4:00 p.m.....Break
- 4:00 - 5:30 p.m.....Poster Session 2
- 5:30 - 6:00 p.m.....Break
- 6:00 - 7:30 p.m.....Workshop Session 3 (with box dinner)
- 7:30 - 8:00 p.m.....Dessert Break
- 8:00 - 9:30 p.m.....Workshop Session 4

Friday, June 1, 2012

- 8:00 - 9:00 a.m.....Registration Check-in/ Continental Breakfast
- 9:00 - 10:30 a.m.....Panel Session 4
- 10:30 - 11:00 a.m.....Break
- 11:00 - 12:30 p.m.....Panel Session 5
- 12:30 - 2:00 p.m.....Closing Lunch and Next Steps



Welcome

from the co-Chairs

On behalf of the entire Capstone Design Conference Organizing Committee we welcome you to Champaign-Urbana for the 2012 Capstone Design Conference.

We are delighted to continue the success of the 2007 and 2010 conferences and to keep building a community of educators, students, and industry to discuss, analyze, and improve capstone design education. Per interest of past conference attendees, the theme for the 2012 Capstone Design Conference is Industry Involvement in Capstone Design.

The 2012 conference is intentionally designed to promote discussion and interaction across the capstone community. We solicited submissions through two primary tracks: papers and industry-academia collaboration posters. Rather than the traditional oral paper presentation format, the conference instead features two conference-wide poster sessions (including faculty, industry affiliates, and students) to encourage vibrant and extensive sharing of ideas and experiences. Based on themes that emerged from the accepted papers

and posters, we invited panel participants to discuss topics related to the conference theme. In addition, we accepted a range of workshops to enable attendees to learn new skills and strategies.

The 2012 conference continues the tradition of student involvement, reflecting students' key role in capstone design. Look for featured capstone student projects in the poster session as well as invited student participation in some of the panel sessions. We are grateful to the contributions of our many conference sponsors, exhibitors, and advertisers who support the student involvement and help us keep the conference fees low.

Take the opportunity to immerse yourself in this conference; expand your capstone network, exchange ideas, and empower your involvement with capstone design courses. We thank you for attending the 2012 conference - we welcome feedback on conference effectiveness and encourage you to spread the word. We look forward to collaborating with you now and in the future!

- Susannah Howe and Peter Rogers, co-chairs

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Organizing Committee



Susannah Howe
Smith College
co-chair



Peter Rogers
Ohio State University
co-chair

Patsy Brackin	Rose-Hulman Institute of Technology
Steve Beyerlein	University of Idaho
Jay Goldberg	Marquette University
Junichi Kanai	Rensselaer Polytechnic Institute
Glen Livesay	Rose-Hulman Institute of Technology
Kevin Nickels	Trinity University
Judith Norback	Georgia Institute of Technology
Scott Palo	University of Colorado
Linda Riley	Roger Williams University
Keith Stanfill	University of Florida
Steve Zahos	University of Illinois

panels

workshops

industry involvement

paper management

special sessions

posters

student involvement

webmaster

communications

fundraising

local organizing

8:00 - 9:00 a.m. Registration Check-in/ Continental Breakfast – Illinois Ballroom Lobby
9:00 - 10:30 a.m. Opening Session – Illinois Ballroom
10:30 - 11:00 a.m. Break – Illinois Ballroom Lobby
11:00 - 12:30 p.m. Panel Session 1

Room
Quad

Session 1A: Intellectual Property for Industrial Projects

Phil Weilerstein, NCIIA, (Facilitator)
Nathalie A L Duval-Couetil, Purdue University
David King, University of Louisville
Scott Metlen, University of Idaho

A major concern with industrial projects is, “Who owns the intellectual property developed?” How do various programs approach IP issues? Are there any implications because of the changes in patent law?

Session 1B: Competition Projects for Capstone Design

Room
Lincoln

Linda Riley, Roger Williams University, (Facilitator)
Anne Buchanan, Shell Eco-marathon competition
Jay Goldberg, Marquette University
Stephanie Hurd, AbilityOne Design Challenge
Michael Philpott, University of Illinois
Roseann Thompson, WERC

Many institutions participate in competitions as part of their capstone design course. What are the advantages and disadvantages of using a competition project for capstone design?

Session 1C: Student Reflections on Capstone Design, Session I

Room
Alma
Mater

Judith Norback, Georgia Institute of Technology, (Facilitator)
Drew Arnold, Oregon State University
John Blamer, Dresser Rand
Zachary Kagan, University of Florida
Amanda Palmer, Vanderbilt University

What do students gain from capstone design? Current and recent capstone design students share their experiences with industry sponsored projects.



12:30 - 2:00 p.m. Keynote Lunch



Illinois
Ballroom

Larry Jutte
President & COO, Ernie Green Industries
Managing Member, Auld Technologies LLC

In March 2010, Larry Jutte began serving as President and COO of Ernie Green Industries. In a senior leadership role at Honda, including positions on the Board of Directors, Jutte provided guidance and direction to Honda’s North American operations and their North American Green Factory environmental program.

Jutte joined Honda in 1985 as a staff engineer in the Equipment Service Department at the Anna Engine Plant. He worked his way up through the organization serving in a variety of engineering and plant management roles including leading the launch of the highly acclaimed 1996 Civic.

In 1996, Jutte led the Anna Engine Plant through a major expansion to 900,000 units per year of the exclusive new V-6 engine. Honda then named Mr. Jutte general manager of parts and procurement and later senior vice president. He led the organization into lean manufacturing principles and standardized the new model launch process. Jutte resigned from Honda in 2009 after a successful and productive career to pursue other interests and is creating a portfolio of engineering and manufacturing companies.

He holds a bachelor’s degree in business administration from Capital University, Columbus, OH, and has completed a four-year electrical apprenticeship program. A native of Ohio, Jutte is an advocate for “Competing Globally Locally” in lean manufacturing and sits on several local boards.

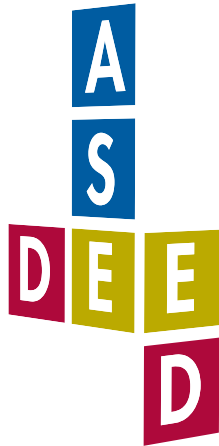


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LET’S GO.





American Society for Engineering Education | Design in Engineering Education Division

Spurring Big Ideas in **Design** Education
June 10 - 13, 2012 | San Antonio, Texas
Join us at the **DEED business meeting** is Monday, June 11 from 6:15 -7:45 in the room 006D in the Henry B. Gonzalez Convention Center

Or come see one of **our sessions!**
DEED covers topics such as: capstone design; innovation in design education; teamwork in design; sustainable design; assessment of design activities; design methodology; and intellectual property/contractual arrangements for design projects.

Ask us about the **DEED/NISH Financial Assistance Program for Design Projects** | See you in June!
DEED website: <http://coen.boisestate.edu/reggert/deed/>

2:00 - 3:30 p.m.

Panel Session 2

Session 2A: The Value of Capstone Design to Industry

Patsy Brackin, Rose-Hulman Institute of Technology, (Facilitator)
Larry Jutte, President and COO, Ernie Green Industries
Jim Trent, Brigham Young University, formerly with Wolf Electronix
Matthew Walker, Vanderbilt University, formerly with Merck
Stephanie Hurd, AbilityOne Design Challenge, NISH

Room
Alma Mater

Representatives with significant industry experience will discuss industry's perspective on the value of capstone design projects.

Session 2B: Multidisciplinary Capstone Design

Thomas Barber, University of Connecticut, (Facilitator)
Scott Dixon, Caterpillar Inc.
Craig Forest, Georgia Institute of Technology
Jay Goldberg, Marquette University
Peter Rogers, The Ohio State University

Room
Quad

The engineer of the future must be able to work on multidisciplinary teams, but implementing multidisciplinary capstone design projects can be a challenge. Come and discuss the potential and the problems.

Session 2C: What I Wished I Had Learned in Capstone Design: An Industry Perspective

Andrew Watchorn, National Instruments, (Facilitator)
Glenn Pope, John Deere
Shekhar Sharad, National Instruments
Susan Shuff, Caterpillar Representative, Cummins Representative, NI Alliance Partner

Room
Lincoln

Industry panelists will share what they wish they had learned in capstone design and how that would have helped them in their careers.

3:30 - 4:00 p.m.

4:00 - 5:30 p.m.

5:30 - 6:00 p.m.

6:00 - 7:30 p.m.

Alma Mater

Break

Poster Session 1 – Chancellor Ballroom

Break

Workshop Session 1 (with box dinner)

Workshop 1A: Capstone 101 - Best Practices For Capstone Course Administration

Peter Schmidt, University of North Carolina—Charlotte
Junichi Kanai, Rensselaer Polytechnic Institute
Peter Rogers, Ohio State University
Keith Stanfill, University of Florida
Greg Watkins, California State University—Chico

The goal of this workshop is to identify best practices in interfacing with industry in the solicitation, definition and implementation and delivery of sponsored projects. Participants will view a short presentation given by the facilitators on interfacing with industry, then break into small groups with the facilitators. They will then have a chance to confer with one another about practical ways to embed these practices in capstone course syllabi that they bring along or in example syllabi provided by facilitators. Dr. Schmidt is the organizer of this session. He serves as a director of the Design in Engineering Education Division (DEED) of ASEE and is actively involved in mentoring colleagues across the country in different aspects of capstone course delivery. Prior to moving to academia, Dr. Schmidt had over 20 years of experience as a design engineer.

Workshop 1B: Safety and Reliability In Capstone

Jennifer Marrs, Long View Consulting LLC

Quad

This workshop examines ABET and industry expectations for safety and reliability training in design education. Participants will gain hands-on experience as well as access to two tools that address these topics--Safety Risk Assessment and Failure Modes, Effects & Criticality Analysis. The facilitator has worked as a mechanical design engineer for over 20 years and is author of the book Machine Designers Reference.

Workshop 1C: Build Your Own Embedded System: A Flexible, Open Reconfigurable Approach for Capstone Courses

Andrew Watchorn and Margaret Barrett, National Instruments

Lincoln

In this workshop, participants will receive a hands-on introduction to industry standard platforms that can be used with graphical programming to build a complete embedded system from scratch. Use of these tools by students in capstone courses will help them quickly design, prototype, and implement real projects and provide experience with some of the same tools they will use in industry.

7:30 - 8:00 p.m.

Dessert Break – Chancellor Ballroom Lobby



8:00 - 9:30 p.m. Workshop Session 2

Alma Mater **Workshop 2A: Capstone 101 - Best Practices For Capstone Course Administration – repeat of 1A**

Quad **Workshop 2B: Safety and Reliability In Capstone – repeat of 1B**

Lincoln **Workshop 2C: It's All About Relationships: Understanding Their Development Inside a Capstone Clinic**
Chuck Pezeshki, Washington State University

This workshop examines the memetic Spiral Dynamics model of human relationships along with its implications for capstone project selection/scoping, client training/debriefing, student-client interactions, student management of 'group knowledge', and external facilitation needed for optimal design achievement as well as professional growth. Over the course of the workshop, participants will have an opportunity to explore, discuss, and assess a variety of project management tools grounded in the principles of Spiral Dynamics. Dr. Pezeshki serves as director of the Industrial Design clinic in the School of Mechanical and Materials Engineering where he has supervised over 190 different student projects made possible by a committed team of clients and nearly \$2M in industry funding.



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NCIIA awards \$1.5 million annually to faculty and student innovators, and offers competitions with cash prizes for biomedical engineering students.

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nciia.org/ventures

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NCIIA creates opportunities to meet and collaborate with peers and colleagues from around the US and the world.

nciia.org/network

6:30 - 7:30 a.m. Run/Walk – Meet in I Hotel Lobby
 Prepare for day two of the conference with an exhilarating run (4 mile) or walk (2 mile) through the beautiful and historic campus of the University of Illinois. The tour guide has promised to focus on the amazing architecture and history of the UI, as you see important buildings related to most of the academic programs offered, including the engineering quad.



8:00 - 9:00 a.m. Registration Check-in/ Continental Breakfast – Chancellor Ballroom Lobby
8:30 - 12:30 p.m. Local Tours and Activities

8:30 - 12:30 p.m. Caterpillar Plant Tour, Decatur, IL – Meet at Conference Center North Door (facing Assembly Hall)

The Caterpillar factory in Decatur manufactures advanced road scrapers, graders and the largest mining trucks in the world! Board the bus at 8:30 AM and be prepared to witness one of the most impressive manufacturing operations imaginable. Illinois is home to Caterpillar, the world's largest producer of bulldozers, excavators, and wheel loaders. The company has experienced 21 straight three-month periods of growth.

Cost is \$15; advanced registration is required. Limited to 45 people.

www.cat.com

8:30 - 9:45 a.m. Blue Waters National Supercomputer – Meet in I Hotel Lobby
 Within a short walk from the conference center this is a guided tour of the National Supercomputer. The Blue Waters project will deliver a supercomputer capable of sustained performance of 1 petaflop on a range of real-world science and engineering applications. It is expected to be one of the most powerful supercomputers in the world. See also the outcome of a cooling system optimization capstone design project conducted by the University of Illinois Department of Mechanical Science and Engineering.

No charge; sign up at the registration table. Limited to 50 people.

www.ncsa.illinois.edu/BlueWaters/

9:45 - 11:15 a.m. Spurlock Museum – Meet at Conference Registration Desk
 The Spurlock Museum's five feature galleries house exhibits representing peoples of the following cultures and geographic areas of the world: Ancient Mesopotamia, Ancient Egypt, and Africa; Ancient Greece and Rome; East Asia, Southeast Asia, and Oceania; Europe; and American Indian Cultures of North and South America.

Board a shuttle at 9:45 AM for a guided tour scheduled from 10:00- 11:00 AM.

No charge; sign up at the registration table. Limited to 13 people.

Note, the museum is within walking distance of the conference center (600 S. Gregory St, Urbana) if you want to visit at another time.

www.spurlock.uiuc.edu

9:45 - 11:30 a.m. Research Park Tour – Meet in I Hotel Lobby
 Just a short walk from the conference center, enjoy an introduction to the Illinois Research Park in the Incubator and then visit three tenants of the park who have experience with capstone students and projects. Tenants include Autonomic Materials, Inc (www.autonomicmaterials.com), State Farm (www.statefarm.com), and John Deere (www.deere.com)

No charge; sign up at the registration table. Limited to 25 people.

www.researchpark.illinois.edu

Local Tours and Activities (continued)

Self-scheduled Krannert Art Museum
Located on the campus of the University of Illinois at Urbana-Champaign and housed within the College of Fine and Applied Arts, the Krannert Art Museum opened its doors in 1961, establishing a permanent home for the University's existing collection of fine art. Featured exhibits include Walking in Paris (19th Century) and Expressions in Color (20th Century). This museum is about a half mile from the conference center (500 East Peabody Drive, Champaign) and also has ample adjacent parking.
Hours are 9 AM -5 PM. No admission charge.
www.kam.uiuc.edu

Self-scheduled Abraham Lincoln Presidential Library and Museum
This slice of history is located just 78 miles from Champaign in Springfield IL and would make an excellent activity for families and guests. Opened just a few years ago, the museum offers a self-guided tour through the life and work of the 16th President. Nearby are the house he lived in while raising a family and practicing law, as well as his gravesite.
www.alplm.org



Capstone Overview

The goal of the Capstone Design Conferences is to provide a forum for engineering and applied science faculty to share ideas about implementing and improving design-based capstone courses. Conferences are held biannually in even years.

Through our two previous Capstone Design Conferences we have established a network of capstone design educators and associated stakeholders committed to supporting one another in implementing various capstone course models, managing teams and projects, engaging stakeholders, incorporating new technology, and collaborating to identify and disseminate effective practices in capstone design education. We welcome the 2012 conference attendees into this friendly and talented community.

As an outcome of our 2010 conference, we published an extensive set of peer-reviewed articles about capstone pedagogy in a special issue of the International Journal of Engineering Education (IJEE, vol. 27-6). We also formed the current conference organizing committee and a working group that is creating a Capstone Hub for sharing instructional, administrative, and mentoring materials. There will be a special workshop session on Thursday evening to hear more about the Capstone Hub.

As an outcome from this 2012 conference, we intend to publish another special issue of IJEE and gather input from a wider array of Capstone Hub stakeholders, leading to exciting collaborative activities that will continue between the conclusion of this conference and the next Capstone Design Conference in 2014. We invite you to join us in our quest for shared excellence in capstone design education.

12:30 - 2:00 p.m.
2:00 - 3:30 p.m.

Quad

Alma
Mater

Lincoln

3:30 - 4:00 p.m.
4:00 - 5:30 p.m.
5:30 - 6:00 p.m.

Birds of a Feather Lunch – box lunch, open seating by topics of interest
Panel Session 3

Session 3A: The Art and Science of Problem Definition

Gene Dixon, East Carolina University, (Facilitator)
Darrell Gibson, Rose-Hulman Institute of Technology
Peter Gorder, University of Colorado at Colorado Springs
Warren Seider, University of Pennsylvania

How do you formulate a problem for capstone design teams? How do you turn a company need into a realistic project scope for engineering students?

Session 3B: Strategies for Attracting Industry Projects

Jerry Crain, University of Oklahoma, (Facilitator)
Joel Barnett, Vanderbilt University
Andrew Dozier, University of Louisville
Emad Jassim, University of Illinois
Paul Jones, Corporate & University Relations Group

How do you partner with industry? How do you find good projects? How do you find good company contacts?

Session 3C: Assessing Capstone Design

Denny Davis, Washington State University, (Facilitator)
John Ochs, Lehigh University
Leslie Potter, Iowa State University
Charlie Setterfield, Sinclair Community College
Scott Post, Bradley University

Students acquire significant knowledge and experience in capstone design. How can we assess this learning? Can we use these assessments for program assessment?

Break
Poster Session 2 – Chancellor Ballroom
Break



6:00 - 7:30 p.m. **Workshop Session 3 (with box dinner)**

Lincoln

Workshop 3A: A Professional Practice Model For Capstone Design Courses

Robert Joel Barnett, Vanderbilt University

This workshop describes the operation of a Professional-Practice Model for Senior Capstone Design Courses which eliminates many of the shortcomings associated with the traditional academic course structure when applied to a realistic design experience. The workshop will describe the sequence of events necessary to implement the model, from initial corporate contact to final project presentation. Examples will be given of documentation, policies and practices, terminology, and other practical aspects of the model. Discussion will be solicited concerning alternate methods or additions/modifications to the Professional –Practice Model. The facilitator has had extensive industrial and academic experience and has taught/supervised Senior Capstone design courses for 15 years and has supervised over 150 projects.

Workshop 3B: Assessing Awareness Of Professional Responsibility In Engineering Projects

Denny Davis, Washington State University

Steven Beyerlein, University of Idaho

Patricia Brackin, Rose-Hulman Institute of Technology

Alma Mater

This workshop presents a web-based professional responsibility instrument and accompanying rubric, which are used to assess student understanding and skill at identifying and discussing areas of strength and opportunity in an ethical case taken from an ongoing capstone project. The session will alternate between short presentations, exploration of website materials, opportunity to score and discuss samples of student work, and learning how class-wide ABET reports can be derived from this data. The facilitators are part of a national research consortium that has developed assessment instruments and supporting curricula as part of the Integrated Design Engineering Assessment and Learning System (IDEALS).

Workshop 3C: What Do You Need From Technology For Capstone Design?

Todd Akins, Mathworks

Quad

This workshop will (1) present the latest features of MATLAB and Simulink to support capstone design including microcontroller targeting/testing, robot and mechanism design, and FPGA/ASIC design, and (2) provide examples of how universities are using these features. Attendees will learn how these features can be used in capstone design and will have the opportunity to provide feed back regarding new features that would benefit capstone design courses.

7:30 - 8:00 p.m. **Dessert Break – Chancellor Ballroom Lobby**



8:00 - 9:30 p.m. **Workshop Session 4**

Lincoln

Workshop 4A: Capstone Design Hub: Building an Online Resource Center for the Capstone Community

Steve Blair, University of Utah

Susannah Howe, Smith College

Peter Rogers, Ohio State University

Junichi Kanai, Rensselaer Polytechnic Institute

Keith Stanfill, University of Florida

Glen Livesay, Rose-Hulman Institute of Technology

The goal of this workshop is to preview the beta version of the new Capstone Design Hub (CDHub) and get feedback from the capstone community to improve the value and usability of the CDHub. The facilitators will discuss the origin of the CDHub idea and review the current content/layout of the site. Participants will have the opportunity to test out the site and will be encouraged to provide input on current content and guidance for future directions.

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Workshop 4B: Assessing Awareness Of Professional Responsibility In Engineering Projects – repeat of 3B

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8:00 - 9:00 a.m. Registration Check-in/ Continental Breakfast – Chancellor Ballroom Lobby

9:00 - 10:30 a.m. Panel Session 4

**Alma
Mater**

**Session 4A: The Importance of Technical Standards:
An Industry Perspective**

Howard Wolfman, Lumispec Consulting,

Adjunct Professor University of Illinois, (Facilitator)

Bruce Harding, Purdue University (ANSI committee member)

Laura Hitchcock, The Boeing Company, Industry representative

Amin Karim, DeVry University

Robert Noth, former President ANSI Board of Directors, John Deere

Jim Olshefsky, ASTM International

This is an interactive session addressing the importance of including technical standards education in engineering curricula and the needs of industry. This panel session is sponsored by the IEEE Standards Education Committee (SEC), a joint standing committee of the IEEE Educational Activities Board and the IEEE Standards Association, and ASTM International.

Quad

Session 4B: Best Practices for Industry Sponsored Projects

Bahram Nassersharif, University of Rhode Island, (Facilitator)

Jennifer Amos, University of Illinois

Promit Bagchi, Dresser Rand

Darrell Kleinke, University of Detroit Mercy

Many programs have long established partnerships with industry. Best practices will be shared from a variety of institutions.

Lincoln

Session 4C: Required Resources for Capstone

Glen Livesay, Rose-Hulman Institute of Technology, (Facilitator)

John Blamer, Dresser Rand

Deborah O'Bannon, University of Missouri, Kansas City

Louis Reifschneider, Illinois State University

Gregory Watkins, California State University Chico

The resources allocated for capstone design vary widely between institutions and within majors. What is needed for a successful program?

10:30 - 11:00 a.m. Break – Chancellor Ballroom Lobby

11:00 - 12:30 p.m. Panel Session 5

Quad

Session 5A: Effective Collaboration with Company Mentors

Keith Stanfill, University of Florida, (Facilitator)

Jack Duggan, Wentworth Institute of Technology

Junichi Kanai, Rensselaer Polytechnic Institute

Alex Radermacher, North Dakota State University

The abilities of external mentors vary widely. Is there a way to improve their performance? Is there a way to prepare mentors for their role?

**Alma
Mater**

Session 5B: Global Projects in Capstone Design

John Aidoo, Rose-Hulman Institute of Technology, (Facilitator)

Jerry Fuh, National University of Singapore

Dean Knudson, North Dakota State University

Joshua Summers, Clemson University

Stanley Thian, National University of Singapore

What are the best practices in global projects? What are some of the different models for global projects?

Lincoln

Session 5C: Student Reflections on Capstone Design, Session II

Judith Norback, Georgia Institute of Technology, (Facilitator)

Promit Bagchi, Dresser Rand

Shraddha Joshi, Clemson University

Adam Vorwald, Roger Williams University

Alexander Hastings, Grand Valley State University

What do students gain from capstone design? Current and recent capstone design students share their experiences with industry sponsored projects.

12:30 - 2:00 p.m. Closing Lunch and Next Steps – Chancellor Ballroom

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Industry Academia Collaboration Posters

list of posters, alphabetical by first author

	Authors	Poster Location	Poster Title	Poster Session
B	Thomas Barber, University of Connecticut	E1	Habco UConn, An Example of a Small Industrial Company's Support of Capstone Programs	Th
D	John Duggan, Wentworth Institute of Technology; Terry McGovern, Morse Engineering; Leonard Anderson, Wentworth Institute; Michael Davidson, Wentworth Institute	E2	An Intra-Disciplinary Approach to Comprehensive Civil Engineering Capstone Design through Faculty and Industry Mentorship	Th
F	Craig Forest, Georgia Tech; Matthew Morrison, Medtronic; Nathan Hotaling, Georgia Tech; Barbara Fasse, Georgia Tech; Chris Hermann, Georgia Tech; Franklin Bost, Georgia Tech	D3	A Quantitative Analysis of the Effects of a MultiDisciplinary Engineering Capstone Design Course	W
G	Ana Goulart, Texas A&M; Matt Hawkes, Cisco Systems, Inc.; Brad Reitmeyer, Cisco System, Inc.; Rafael Busato, Texas A&M ; Douglas Nappier, Texas A&M; Ryan Nietsche, Texas A&M; John Orsted, Texas A&M	C4	Blue Box: A Bluetooth Test Automation Tool	Th
	Rachel Geary, Baltimore Gas & Electric Co.; Nathan Scott*, The Johns Hopkins University	B2	Johns Hopkins Engineering and Baltimore Gas & Electric Co.: documenting a successful long term collaboration	Th
H	Josef Hortnagl, Oregon State University; John Parmigiani, Oregon State University; Tyler Froemming, Oregon State University	C3	The Oregon State University Mini Malter	W
J	Emad Jassim, University of Illinois	D4	Senior Design Projects with a Humanitarian ImpactA Shell Oil Company and U of I Department of Mechanical Science and Engineering Partnership	Th
	Emad Jassim, University of Illinois	B5	Blue Waters Design Projects: National Center for Supercomputing Applications involvement in the U of I MechSE Senior Design Program	W
	Shraddha Joshi, Clemson University; Beshoy Morkos, Clemson University; Joshua Summers, Clemson University	F2	Requirements Analysis: Case study with Capstone Design Project	W
O	Deborah O'Bannon, Univ. Missouri-Kansas City; Thomas Kimes, HDR; Erich Schmitz, TranSystems	A1	Creating and supporting a sustainable corps of industry practitioners for CE capstone design	W
P	Alan Pisano, Boston University; Ballard Andrews, Schlumberger Doll Research	F1	Software for Automated Local Monitoring of Oil Spills: A Capstone Collaboration between Schlumberger and BU	W
	Christopher Pung, Grand Valley State University; Andrew Sterian, Grand Valley State University; Wael Mokhtar, Grand Valley State University; Ryan Phillips, Magnum Engineering	A2	Capstone Expectations: Fulfilling Industrial and Academic Requirements	W
S	Allison Sieving, Purdue University; Ann Rundell, Purdue University; Andrew Brightman, Purdue University; Anissa Lloyd, Kinetic Concepts, Inc; Marcia Pool, Purdue University; Trisha Eustaquio, Purdue University	B1	Teaching Industry Principles of Practice from Need Identification to Market Assessment	Th

Capstone 2012 Poster Session Layout

Wednesday										Thursday	
F1	F2	F5	F6	F9	F10	F13	F14	F17	F18		
E1	E2	E5	E6	E9	E10	E13	E13	E17	E18		
D3 D4		D7 D8		D11 D12		D15 D16		D19 D20		D21 D22	
C3 C4		C7 C8		C11 C12		C15 C16		C19 C20		C21 C22	
B1	B2	B5	B6	B9	B10	B13	B14	B17	B18		
A1	A2	A5	A6	A9	A10	A13	A14	A17	A18		

Regular Papers

list of posters, alphabetical by first author

	Authors	Poster Location	Poster Title	Poster Session
A	John Aidoo, Rose-Hulman Institute of Technology; Shannon Sexton, Rose-Hulman Institute of Technology; James Hanson, Rose-Hulman Institute of Technology; Robert Houghtalen, Rose-Hulman Institute of Technology; Matt Lovell, Rose-Hulman Institute of Technology	E9	International Design Project Experiences: Assessing the Long-term Impact on Students	Th
	Jennifer Amos, University of Illinois	E5	Capstone experiences that build discipline identity	Th
	Drew Arnold, Oregon State University; John Parmigiani*, Oregon State University	F17	Using Graduate Assistants as Project Advisers for Industry-Sponsored Capstone Design Projects	W
D	Denny Davis, Washington State University; Steve Beyerlein, University of Idaho; Michael Trevisan, Washington State University; Phillip Thompson, Seattle University; Susannah Howe, Smith College; Howard Davis, Washington State University; Jay McCormack, University of Idaho; Patricia Brackin, Rose-Hulman Institute; Javed Khan, Tuskegee University; Paul Leiffer, LeTourneau University	E13	IDEALS for Professional Skills Achievement and Assessment	W
	Gene Dixon, East Carolina University	F6	Capstone Project Problem Statements	Th
	Andrew Dozier, University of Louisville; David King, University of Louisville	A10	Intellectual Property Issues and Capstone Projects	W
E	John Estell, Ohio Northern University; Juliet Hurtig, Ohio Northern University	C7	Adopting Best Corporate Practices for Capstone Courses	Th
F	Cliff Fitzmorris, University of Oklahoma; Jerry Crain, University of Oklahoma	F9	Defining Industry Sponsored Capstone Projects	W
	Matthew Franchetti, The University of Toledo; Christine Smallman, The University of Toledo	A5	Framework to Implement Engineering Senior Design Clinics to Enhance Industry Collaboration	Th
G	Jay Goldberg, Marquette University; Vikram Cariapa, Marquette University; George Corliss, Marquette University; Kate Kaiser, Marquette University	B6	The Benefits of Industry Involvement in the Multidisciplinary Capstone Design Course at Marquette University	W
	Peter Gorder, University of Colorado Colorado Springs	C15	Structured Approach to Problem Specification in Industry Sponsored Capstone Design Project	Th
K	Junichi Kanai*, Rensselaer Polytechnic Institute; Mark Anderson, Rensselaer Polytechnic Institute	A17	Helpful Guidelines in Working with Industry Sponsors	W
	Philip Kazemersky, University of Tennessee Chattanooga	D11	Academic, Industry, & Capstone Design-A View	W
	Carsten Kleiner, University of Applied Sciences; Dean Knudson, North Dakota State University; Kristian Sandahl, Linköping University	D7	A Preliminary Report on Establishing an Industry Based International Capstone Exchange Program	Th
	Darrell Kleinke, University of Detroit Mercy	B9	Conflicting Mindsets: Industry Sponsors and Capstone Instructors Working Together	Th
	Jason Kolodziej, Rochester Institute of Technology; Scott Delmotte, Dresser-Rand; John Blamer, Dresser-Rand; Promit Bagchi, Dresser-Rand; William Nowak, Xerox Corporation	D12	Compressor Commissioning at RIT Demonstrates Real-World Design, Test & Research Experience	Th
L	Fred Looft, Worcester Polytechnic Institute	B14	A Systems Engineering Graduate Capstone Project Requirement	W
M	Robert McVay, U.S. Military Academy; Bruce Floersheim, U.S. Military Academy; Kevin Hollander, SpringActive, Inc.; Alex Boehler, SpringActive, Inc.; Mathew Holgate, SpringActive, Inc.; Adarsh Ayyar, BAE Systems Aerospace & Defense Group, Inc.	D8	The Benefits of Involving Industry in Engineer Capstone Courses: A Case Study	W
	Martin Morris, Bradley University; Scott Post, Bradley University; Julie Reyer, Bradley University	B13	A Gated Review Process for Administering a Capstone Senior Design Course	W
	Bahram Nassersharif, University of Rhode Island; Linda Riley, Roger Williams University	D15	Some Best Practices in Industry-Sponsored Capstone Design Projects	Th
N	Priscilla Nelson, New Jersey Institute of Technology	A9	Civil and Environmental Engineering Capstone Development in Partnership with Industry at NJIT	W
	Kevin Nickels, Trinity University	F10	Transplanting a Robotic Hockey Competition between Universities	W
	John Ochs, Lehigh University; Lisa Getzler-Linn, Lehigh University	C11	Direct, Authentic and Formative Assessment of Cross-College Industry-Sponsored Capstone Project Teams	W
P	Scott Post, Bradley University; Julie Reyer, Bradley University; Martin Morris, Bradley University	F13	Use of Alumni Advisory Board in Assessment of Achievement of Student Outcomes in Capstone Design	Th
	Leslie Potter, Iowa State University	C8	Using Industry to Drive Continuous Improvement in Capstone Design	W
	Ninad Pradhan, Clemson University; Timothy Burg, Clemson University; Richard Groff, Clemson University; Darren Dawson, Clemson University	C12	Robotics as a Learning Medium for Engineering Practice and Team-based Design in Capstone Projects	Th
R	Louis Reifschneider, Illinois State University	D16	Critical Mass for Sustainable Corporate CapstoneCourses	W
	Julie Reyer, Bradley University; Martin Morris, Bradley University; Scott Post, Bradley University	E14	Capstone Teams: An Industry Based Model	W
S	Warren Seider, University of Pennsylvania; Leonard Fabiano, University of Pennsylvania	A6	Capstone Chemical Product and Process Design Courses: Industry-Faculty Interactions	Th
	Charlie Setterfield, Sinclair Community College	C16	Burning the Candle at Both Ends: Igniting Advisory Board Assessment at Capstone	W
	Bridget Smyser, Northeastern University; Gregory Kowalski, Northeastern University; Mohammad Taslim, Northeastern University	E6	Small Business Sponsored Projects: Factors for Success	W

Regular Papers

list of posters, alphabetical by first author

	Authors	Poster Location	Poster Title	Poster Session
T	Stanley Thian, National University of Singapore	F14	Capstone Global Design Collaboration: The NUS Experience	Th
	Samantha Thoe, Clemson University; Joshua Summers, Clemson University	B17	Survey Comparison of National and International Capstone at Clemson University	Th
	John Tocco, Lawrence Technological University; Luis Mata, Lawrence Technological University	A14	The Mentor Initiative: A Framework for Industry Involvement in the Capstone	Th
	Jim Trent, Brigham Young University; Robert Todd, Brigham Young University	F5	Bridging Capstone Design with Industry Needs through Communication, Training and Involvement	W
W	Gregory Watkins, California State University, Chico	B10	Workload Credit for Supervising Capstone Design Projects	Th

Student Project Posters

list of posters, alphabetical by institution

	Student Authors	Poster Location	Poster Title	Poster Session
Boise State University	Ryan Thompson, Shem Purnell, Blake Rapp	D20	Development of Sensors for Tracking Wildlife Behavior	W
Roger Williams University	Christian Lopez, Robert Cotta, Kyle Styczynski, Adam Vorwald	E18	Iron Particulate Remediation and Prevention at A Burn Research Facility	W
Purdue University	Nicholas Pisano, Samuel Brewer	C20	Design of A Slow-Water Energy Harvester Using Multidisciplinary Correspondent Methodology	Th
Texas A&M University	Jay Kapadia; Yaser Albadulbaqi, Krish Poddar, Obinna Osuorji, Chad Cooper	C21	NASA: Orion Lighting Project	W
University of Florida	Ginina Vitucci, Randall Bush, John Colby, Kyle Steiner, Eric Jeffers, Navid Shahrestani, Lauren Hawkins	A18	Autonomous Control and Short Range Remote Control of ATV for Area Investigation	Th
	Zachary Kagan, James Buquet, Stanley Tang, Jose Garcia, Andrew Doyle	E17	MRI Compatible Impedance Meter for ECG Applications	W
University of Illinois	Sanat Bhole, Matthew Ernst	F18	Illini EcoConcept: Designing, Fabricating, and Competing in a Hydrogen Fuel Cell Vehicle	W
	Daniel Bernacki, Benjamin Floyd, Trevor Greene, David Kaiser	C19	Illini Hybrid Racing	Th
	Bradley Thompson	B18	SAE Baja - The Off-Road Illini	Th
University of Louisville	Chad Carius, Madison McClellan, Andrew McGinnis	D21	SAE Baja - The Off-Road Illini	Th
University of Oklahoma	Maryam Sabeghi, Austin McAnelly, Brett Bone, Andrew Freeman	C22	Powerpack Assembly Automation	Th
University of Waterloo	Amanda LeDuc, Curtiss Luong, Karen Choi, Tim Annan	D19	iRASA: Information Resource Allocation and Scheduling Application	Th



Exhibitor descriptions

Exhibits will be in the Chancellor Ballroom:

Wednesday 10:30 a.m. - 6:00 p.m.
Thursday 9:00 a.m. - 6:00 p.m.

AbilityOne Design Challenge

The AbilityOne Network Design Challenge was founded by NISH to encourage the development of creative technological solutions for barriers that prevent people with disabilities from entering or advancing in the workplace. The Design Challenge is open to any college student or student team at the graduate or undergraduate level and is a great service learning opportunity for engineering, computer science, industrial design, physical therapy and occupational therapy students!

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(continued)

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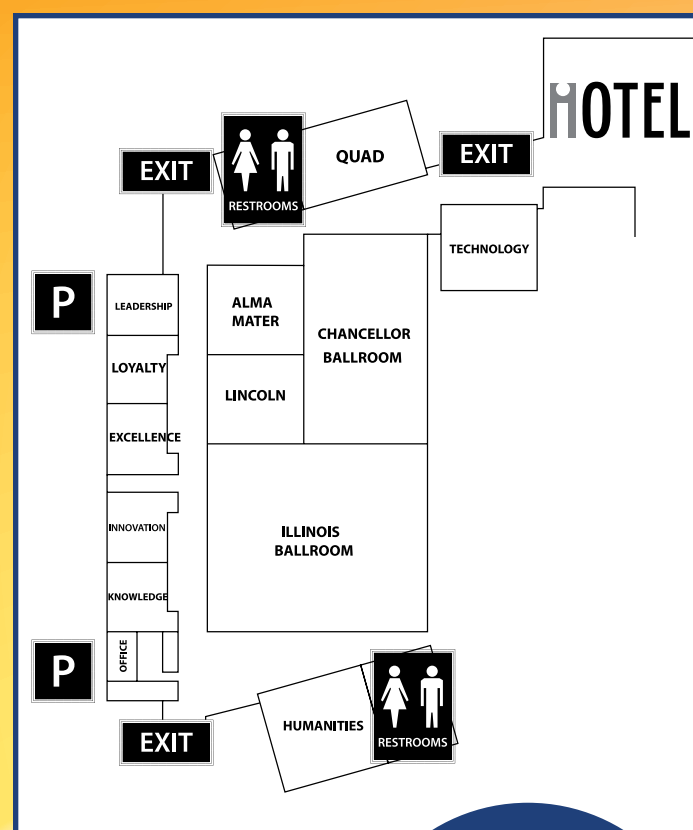
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